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Southwestern

Forest Insect & Disease Bulletin

SOUTHWESTERN REGION

U.S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

ol. 5 January 1975 No. 1

EST INSECT AND DISEASE CONDITIONS - 1974

Conditions in Brief

Bark beetles continued as the most destructive group of insects in the Southwestern Region. Severe drought conditions during the winter, spring, and early summer months killed and weakened ponderosa pine trees throughout the Region, providing favorable conditions for buildups of secondary bark beetles. Widespread outbreaks of pine engraver beetles occurred on the Apache-Sitgreaves, Prescott, and Tonto National Forests in Arizona and on the Cibola and Lincoln National Forests in New Mexico. The roundheaded pine beetle caused scattered mortality of pole-size ponderosa pine on the Lincoln National Forest and Mescalero-Apache Indian Reservation, N. Mex., but heavier tree losses were predicted for 1975. Many sawtimber-size ponderosa pines were killed by the western pine beetle in the Region. A mountain pine beetle outbreak in ponderosa pine continued to increase on the Kaibab National Forest, Ariz. Engelmann spruce beetle infestations declined for the second year.

Defoliating insects attacked conifers and aspen in portions of the Region, but the damage was minimal. There were localized increases in western spruce budworm defoliation in northern Arizona and New Mexico. Ornamental spruce, white fir, and Douglas-fir trees were defoliated by the Douglas-fir tussock moth in Santa Fe, Ruidoso, and Los Alamos, N. Mex. The efficacy of ground application of Bacillus thuringiensis was tested against the Douglas-fir tussock moth; excellent control was achieved. Other defoliator conditions are discussed in this report.

The most important disease agents were the dwarf mistletoes. Treatment for the prevention and suppression of mistletoes was limited to commercial stands and high priority recreation areas. Non-commercial stands were not treated. In general, the incidence of mistletoe is lower in forests of the Region that have a high commercial to non-commercial stand ratio. The status of mistletoes on non-commercial forested acreage is uncertain. Pollution survey plots to determine sulfur dioxide damage to forest vegetation were reduced to 7 from the previous 47. Air pollution damage to major forest vegetation was not apparent in New Mexico or Arizona.

Status of Insects

Ips beetles, Ips spp. These bark beetles caused severe local and widespread mortality of ponderosa pine on the Apache-Sitgreaves, Prescott, and Tonto National Forests, Ariz., and the Cibola and Lincoln National Forests, N. Mex. Several species were involved, but the Arizona five-spined ips, Ips lecontei Sw., and the pine engraver, Ips pini (Say), created the greatest problems. Severe drought conditions during the winter, spring, and early summer months killed or weakened trees, making them highly susceptible to attack. Ponderosa pine stands on dry, rocky ridgetops or on deep, droughty soils were most commonly affected. Furthermore, stand disturbances from logging and fire also created ideal conditions for beetle population build-up in some areas.

A suppression project on the Crown King Ranger District, Prescott National Forest, Ariz., effectively reduced ips populations in and adjacent to 100 acres of highly developed recreation facilities in Horsethief Basin.

Roundheaded pine beetle, Dendroctonus adjunctus Blandf. This insect continued to kill small diameter, relatively non-vigorous ponderosa pine trees on and near the Lincoln National Forest and Mescalero-Apache Indian Reservation in southern New Mexico. Even though tree losses were light in 1974, there is some concern that populations may increase because of the extensive amount of drought-stressed ponderosa pine that is currently available for breeding material. Historically, roundheaded pine beetle activity has increased following periods when drought-stressed trees were present. In 1975, detection efforts will be strengthened in areas where this beetle has been active to check for possible increases in tree losses. Suppression measures were not recommended.

Western pine beetle, Dendroctonus brevicomis LeC. This insect greatly increased its activity throughout the ponderosa pine forests of the Southwest. Many scattered sawtimber-sized trees were killed on the Apache-Sitgreaves, Prescott, and Tonto National Forests in central Arizona and the Lincoln National Forest in southern New Mexico. This pest was found working by itself and in association with the red turpentine beetle, D. valens LeC., the Mexican pine beetle, D. parallelocollis Chapuis, and Ips spp. Drought conditions during the first half of 1974 are thought to be responsible for the increase of these normally secondary beetles.

Mountain pine beetle, Dendroctonus ponderosae Hopk. An estimated 4,750 ponderosa pines were killed by this beetle within a 4,500-acre area on the Kaibab National Forest, south of Jacob Lake, Ariz., in 1974. The infestation had developed within a timber sale area, and it was hoped that the outbreak could be suppressed through removal of currently infested trees prior to the beetle flight. However, the trees were not removed and new attacks were observed in the sale area and also in adjacent stands. A stand cruise conducted in the sale area in September 1974 indicated that the infestation had increased from about 1.9 trees per acre in 1973 to 4.5 trees per acre in the fall of 1974.

While constructing roads in the timber sale area, many trees had been pushed over and left. All of the pushed-over trees that were inspected were heavily attacked by the mountain pine beetle. Adults had constructed egg galleries, laid eggs, and larvae were actively feeding. The broods appeared healthy. Blackman (1931)[1/] indicated

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1/ Blackman, M. W. 1931. The Black Hills beetle (Dendroctonus ponderosae Hopk.). Bull. of the N.Y. State Coll. of Forestry at Syracuse Univ., Vol. IV, No. 4, Tech. Publ. No. 36. 97 p.

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that the mountain pine beetle will attack trap trees, but broods often did not complete development.

In northern New Mexico, widely scattered ponderosa pine mortality was detected on the Penasco, Taos, and Tres Piedras Ranger Districts, Carson National Forest. These infestations have caused scattered losses for several years, and a similar static trend was forecast for 1975. Sanitation-salvage logging was recommended.

Spruce beetle, Dendroctonus rufipennis (Kby.). A long-standing outbreak in Engelmann spruce stands on the Fort Apache Indian Reservation, Ariz., continued to decline for the fourth consecutive year. Sub-zero temperatures, which occurred during the winter of 1971, apparently initiated the decline.2/ A few trees were killed in 1974,

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2/ Frye, R. H., H. W. Flake, and C. J. Germain. 1974. Spruce beetle winter mortality resulting from record low temperatures in Arizona. Environ. Entomol. 3(5): 752-4.

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but further losses were not expected.

On the San Francisco Peaks, Coconino National Forest, near Flagstaff, Ariz., a spruce beetle population that had been building up in avalanche-damaged spruce was suppressed. Treatment was accomplished by removal of bark from infested trees and stumps, and some of the infested material was burned. Other methods of treatment were not used because of timing and access problems and public sensitivity to management practices in the San Francisco Peaks area.

Elsewhere in the Region, only widely scattered tree losses were detected from spruce beetle.

Western spruce budworm, Choristoneura occidentalis Free. A slight increase in budworm activity was detected throughout the Region in 1974. Light to moderate defoliation of Douglas-fir and white fir occurred in Arizona on the Kaibab Plateau. In New Mexico, light to moderate defoliation was detected on State and private lands east of Eagle Nest; the Carson National Forest, east of Taos; the Sandia Mountains, east of Albuquerque; and near the New Carrisa Lookout, Lincoln National Forest. Only light defoliation is forecast for 1975 on these forests.

Douglas-fir tussock moth, Orgyia pseudotsugata McD. Ornamental spruce, white fir, and Douglas-fir trees were defoliated again in the cities of Santa Fe, Ruidoso, and Los Alamos in New Mexico. Infestations in and near all three cities increased over the 1973 level. The outbreaks are expected to decline in 1975.

The efficacy of ground application of Bacillus thuringiensis was tested in Santa Fe. The Region and the Rocky Mountain and Pacific Northwest Forest and Range Experiment Stations cooperated in the test. The objective of the study was to demonstrate the effectiveness of the microbial insecticide applied by a hydraulic sprayer. Excellent control (99.7 percent after 14 days) was achieved.

Western tent caterpillar, Malacosoma californicum (Pack.). Populations of this pest increased in the aspen type on the Kaibab Plateau and Escudilla Mountain, Ariz., and the Black Range, Gila National Forest, N. Mex. Defoliation, although severe in some areas, was not expected to cause immediate mortality, since the trees appeared vigorous and quickly refoliated. The tent caterpillar populations on the aspen in northern New Mexico have declined.

White-fir needle miner, Epinotia meritana Hein. An outbreak of this insect continued for the third year on 10,000 acres of the Apache-Sitgreaves National Forest, northwest of Alpine, Ariz. Additional top-kill of white fir was observed on permanent study plots within the infested area.

Southwestern pine tip moth, Rhyacionia neomexicana (Dyar). This insect continued to damage reproduction-size ponderosa pines in regenerated burns on the Apache-Sitgreaves National Forest, Ariz. Studies are being conducted jointly by the Region and the Rocky Mountain Forest and Range Experiment Station to determine the damage being incurred by this insect.

Pinyon needle scale, Matsucoccus acalyptus Herb. This insect caused severe damage to trees in and around Prescott, Ariz., and Santa Fe, N. Mex. A cultural control method developed by the Region and the Rocky Mountain Forest and Range Experiment Station has received widespread acceptance in these two cities where private homeowners desire an effective alternative to pesticides.

Other insects. A large aspen tortrix, Choristoneura conflictana (Wlk.). infestation remained at a high level on the Kaibab National Forest, Ariz. A leaf-rolling gelechiid moth, Compsolechia niveopulvella (Chambers), caused noticeable aspen defoliation near Alpine, Ariz. Extensive defoliation of aspen occurred in northern New Mexico as a result of late frost and an unknown leaf-rolling moth. The tiger moth, Halisidota ingens Hy Edws., continued to cause some scattered defoliation of ponderosa and pinyon pines throughout the Region.

Status of Diseases

Dwarf mistletoes. Dwarf mistletoes, Arceuthobium spp., continue to be the most important disease in the Southwest. Arceuthobium vaginatum subsp. cryptopodum (Engelm.) Hawks. and Wiens, which occurs on ponderosa and Apache pines, is the most important destructive disease of commercial forests in Arizona and New Mexico. In 1974, approximately 31,000 acres were treated. Prevention through silvicultural stand treatments continues to be emphasized.

The economic evaluation of dwarf mistletoe control practices in ponderosa pine, a cooperative project with the Rocky Mountain Forest and Range Experiment Station, has been completed. A final report is expected in 1975.

Air pollution. The 47 vegetation plots examined in previous years for sulfur dioxide injury have been reduced to 5 areas in Arizona and 2 in New Mexico. These 7 plots are near major sources of sulfur dioxide or have suffered previous pollution damage. Sulfur dioxide injury was not apparent in the 6 areas examined in 1974. One area in Arizona was inaccessible. The diagnosis of air pollution injury was complicated by the inexperience of new staff personnel with pollution injury and the similarity of pollution injury to other disease symptoms. The need to establish and maintain vegetation plots for air pollution injury monitoring will continue to be explored.

A cooperative study with the University of Arizona to determine symptomatology and relative susceptibility of selected southwestern plants to sulfur dioxide is continuing and completion is scheduled for December 1975.

Aspen diseases. Aspen stands in the southern Rocky Mountains are heavily infected with stem rots and canker-causing organisms. The selective cutting of aspen has resulted in severe logging damage to residual trees. Consequently, the trees may be more susceptible to infection by disease-causing microorganisms.

An evaluation of aspen diseases in relation to timber harvesting methods was initiated on the Carson National Forest. The study is a cooperative effort with the Rocky Mountain Forest and Range Experiment Station.

Rusts. Limb rust, Peridermium filamentosum Pk., remained at an endemic level in ponderosa pine forests of the Southwest. Midcrown branch mortality caused by limb rust was frequently noted on the South Rim of Grand Canyon National Park. Removal of rust-infected trees should maintain this disease at an endemic level.

Spruce broom rust, Chrysomyxa arctostaphyli Diet., and fir broom rust, Melampsorella caryophyllacearum Schroet., continued to cause spiketops, bole deformation, and some mortality in several areas of the Region. Broom rust on white fir appears to be increasing on portions of the Cibola National Forest. Removal of substantial numbers of infected trees may be necessary to arrest deterioration of white fir stands.

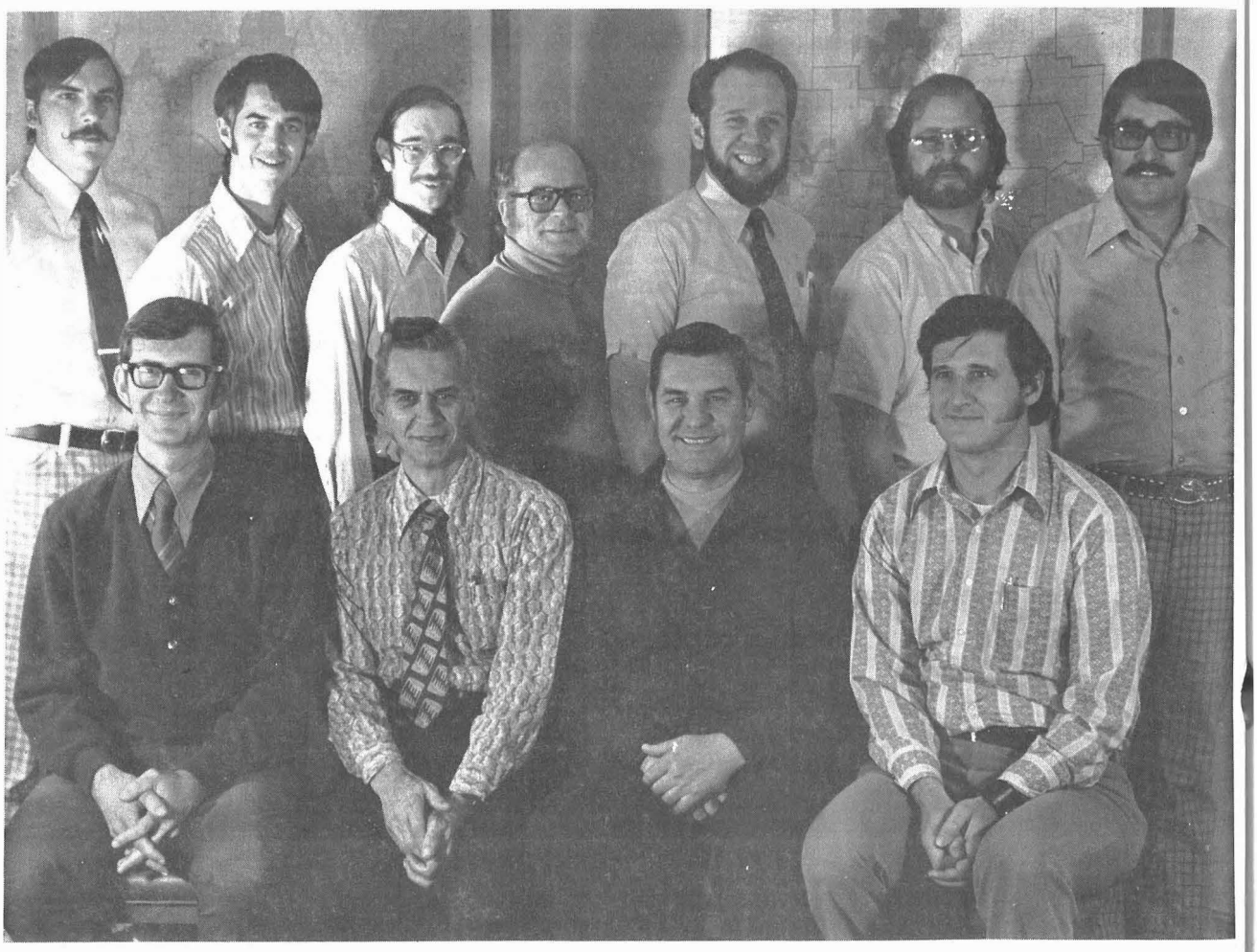
Juniper broom rust, Gymnosporangium spp., has caused some concern among landowners residing in the pinyon-juniper type.

Foliage diseases. Foliage diseases remained at an endemic level throughout the Southwestern Region. Elytroderma deformans (Weir) Dark., was noted on several scattered trees along the South Rim of Grand Canyon National Park. Marssonina populi (Lib.) Magn., caused minor defoliation of aspen in scattered areas of the Carson National Forest. Ink spot, Ciborinia confundens (Whetz.) Whetz., on aspen was not reported this year, although local outbreaks probably occurred.

Drought stress. Individual and scattered groups of ponderosa pine declined throughout the Region. Examination of dying and dead pines revealed several probable causes for their condition. The Region has experienced periods of drought for several years. Especially significant to tree vigor was the extremely low precipitation in many portions of the Region between July 1973 and July 1974. Drought stress, compounded by reduced vigor resulting from mistletoe parasitism, concomitant with attacks from secondary insects, resulted in tree mortality.

Salt damage. White fir, Engelmann spruce, and corkbark fir showed symptoms of chloride damage resulting from uptake of runoff waters from highways treated with deicing salt. Salt damage occurred on roadside trees along highways maintained for winter recreation on the Cibola and Santa Fe National Forests. Damage due to chloride toxicity was confirmed by foliage analysis of white fir on the Cibola National Forest. The State Highway Department is aware of the problem and is taking corrective action to reduce the damage. Modified methods will be used for treating these highways during the 1974-75 winter season, and pathologists from the Regional Office will continue to monitor affected areas.

FOREST INSECT AND DISEASE MANAGEMENT STAFF UNIT



Front Row (Left to Right): Bob Acciavatti, Don Graham, Don Lucht, and Gene Lessard; Back Row (Left to Right): Jim Walters, Doug Parker, Brian Geils, Lester Putman, Ed Sharon, Emmett Wilson, and Mike Chavez. (Vicki Romero is absent from photo.)

Donald P. Graham is the Director of the Staff Unit. He comes to Region 3 from the Washington Office staff. Don received a B.S. in Forestry from the University of Idaho in 1949 and a M.S. in Forest Pathology from Louisiana State University in 1952. Don is a native of eastern Washington, where he spent 12 years with the Forest Service's Inland Empire Research Center at Spokane. After 6 years as Regional pathologist

in Region 6, Don transferred to the Washington Office in 1967 as Assistant Director, Division of Forest Pest Control, where he was responsible for the national programs of forest disease survey, evaluation, and control.

Douglas L. Parker is the Assistant Director of the Forest Insect Detection and Evaluation Group. A native of Utah, Doug received his B.S. in 1965 in Zoology and a M.S. in 1969 in Entomology from Utah State University. He spent 6 years in Region 4 prior to assuming this position.

Edward M. Sharon is the Assistant Director of the Forest Disease Group. Ed previously spent 9 years with the Northeastern Forest Experiment Station in Durham, New Hampshire, where he was research pathologist with the Decay and Discoloration Pioneering Project. His research dealt with elucidating the biological events associated with discoloration and decay in living trees. His research has contributed to the development of a concept of defect compartmentalization within trees. Ed is a native of Connecticut. He received a B.S. in Forestry from the University of Connecticut in 1963 and a M.S. in Plant Pathology from Yale University in 1965. He is a member of the American Society of Phytopathology and Sigma Xi, the Scientific Research Society of North America. In his present position, Ed will be evaluating the applicability of research findings in pathology to forest problems in the "real world."

Donald D. Lucht is the staff specialist in charge of Cooperative Insect and Disease Control and Special Projects. Don also functions as an Assistant Director and as the Pesticide-Use Coordinator for Region 3. He is from Illinois and attended Colorado State University where he received a B.S. in Entomology in 1955 and earned a M.S. in Forest Entomology from Purdue University in 1961. His experience includes 5 years as an entomologist with the State of New Mexico and 1 year with Region 9 prior to coming to Region 3 in 1962.

James W. Walters is a pathologist in the Forest Disease Group. Jim attended Colorado State University and received a B.S. in Wildlife Biology in 1971 and a M.S. in Forest Pathology in 1974. He is a native of Illinois and previously worked in Region 2.

Robert E. Acciavatti is an entomologist in the Forest Insect Detection and Evaluation Group. Bob is from New York where he graduated from the New York State College of Environmental Science and Forestry with a B.S. in Forest Management in 1966 and a Ph.D. in Forest Entomology in 1972. He worked for 2 years as a forester for the U.S. Army Corps of Engineers in Arkansas, east Texas, and Louisiana.

Eugene D. Lessard is an entomologist in the Forest Insect Detection and Evaluation Group. Gene is a native of Indiana and attended the University of Washington. He has a B.S. in Forestry and a M.S. in Entomology.

Emmett T. Wilson is a biological technician with the Forest Insect Detection and Evaluation Group. "E.T." joined the staff from the Asheville, North Carolina, Zone Office of Forest Pest Management, where he worked for the past 8 years. He is also a native of Asheville. "E.T" has 2 years experience with the Southeastern Forest Experiment Station and 7 years with the Air Force and Army.

John M. Chavez is a biological aid in the Forest Insect Detection and Evaluation Group. A native New Mexican, Mike was seriously wounded in Vietnam in 1971. His disability has not kept him from completing 2 years of study at the University of Albuquerque and contributing much to our organization.

Victoria L. Romero is a biological aid in the Forest Insect Detection and Evaluation Group. Vicki is a native New Mexican and has attended the University of New Mexico. Vicki conducts laboratory work dealing with rearing insects and preparing them for scientific study and identification.

Brian W. Geils is a forestry technician with our Forest Insect Detection and Evaluation Group. He is from Illinois and attended Utah State University. Brian has worked on various field assignments, such as spruce beetle and dwarf mistletoe surveys since 1970.

Lester O. Putman is the Staff Unit's clerk-typist. Lester is from Maryland and served $16\frac{1}{2}$ years with the Air Force before he joined us in 1965. Lester is a valuable asset to our group and has kept everything running smoothly during the many personnel changes we experienced recently.

NEW MEXICO'S NEW STATE FOREST ENTOMOLOGIST

A cooperative agreement between the U.S. Forest Service and the New Mexico Department of Agriculture has resulted in the hiring of Anthony H. Smith as State forest entomologist. Tony began work in 1973 on a program of forest pest detection and evaluation on non-Federal lands in New Mexico. His efforts will do much to fulfill State-Federal responsibilities in this area. His address is:

Tony Smith
Division of Plant Industry
New Mexico Department of Agriculture
Box 3189
Las Cruces, New Mexico 88003
Telephone: (505) 646-3207

RECENT TALKS BY STAFF PERSONNEL

Our staff entomologists and pathologists participated in three Silviculturist Certification Workshops presented this fall in Flagstaff and Springerville, Arizona, and Albuquerque, New Mexico. We thank Darrell Crawford, Timber Management Staff Unit, for this opportunity and look forward to participating in future workshops of this nature.

Doug Parker visited Minneapolis, Minnesota, in December, to participate in the Entomological Society of America national meeting.

Ed Sharon spoke at the Pennsylvania-Delaware Chapter of the International Shade Tree Conference on "Decay Detection Meter for Living Trees" (Shigometer). This instrument resulted from 7 years of research and is receiving extensive use by the utility pole industries and arborists in urban forestry.

Ed Sharon was an invited lecturer at the 8th Wood Dryers Short Course in Skowhegan, Maine. He spoke on "Decay and Discoloration Processes in Living Trees: their Relationship to Kiln Drying Problems."

Don Lucht attended the National Agricultural Aviation Association meeting in Las Vegas, Nevada, in December to obtain information on new aerial chemical application techniques.

Don Graham participated in the Forest Pest Committee meeting of the Western Forestry and Conservation Association at Spokane, Washington, in December. West-wide forest insect and disease programs and needs are discussed annually at this meeting.

Don Graham, Don Lucht, and Ed Sharon met with various State and Federal agencies at the New Mexico Forest Insect and Disease Interagency meeting in Las Cruces, New Mexico, in October. This meeting deals with administrative and technical problems of forest insect and disease management on State and Federal lands in New Mexico.

RECENT PUBLICATIONS

Acciavatti, R. E., and M. J. Weiss. 1974. Evaluation of dwarf mistletoe of Engelmann spruce, Fort Apache Indian Reservation, Arizona. Plant Dis. Rep. 58(5): 418-419.

Flake, H. W., Jr., and D. T. Jennings. 1974. A cultural control method for pinyon needle scale. USDA Forest Serv. Res. Note RM-270. 4 p.

Frye, R. H., H. W. Flake, Jr., and C. J. Germain. 1974. Spruce beetle winter mortality resulting from record low temperatures in Arizona. Environ. Entomol. 3(5): 752-754.

Lucht, D. D., R. H. Frye, and J. M. Schmid. 1974. Emergence and attack behavior of Dendroctonus adjunctus Blandford near Cloudcroft, New Mexico. Ann. Entomol. Soc. of Amer. 67(4): 610-612.

Sharon, E. M. 1974. An altered pattern of enzyme activity in tissues associated with wounds in Acer saccharum. Physiol. Plant Pathol. 4: 307-312.

Sharon, E. M., and Alex L. Shigo. 1974. A method for studying the relationship of wounding and microorganisms to the discoloration process in living trees. Can. J. of Forest Res. 4(1): 146-148.

Sharon, E. M. 1974. Anaerobic environment enhances the detection of bacteria in tissues associated with wounds in living trees. Phytopathology 64(5): 585.

Stevens, R. E., and H. W. Flake, Jr. 1974. A roundheaded pine beetle outbreak in New Mexico: associated stand conditions and impact. USDA Forest Serv. Res. Note RM-259. 4 p.

Walters, J. W. 1974. The importance of bole infections in the spread of lodgepole pine dwarf mistletoe. Plant Dis. Rep. (In press).

Copies of the above publications can be obtained from our office.

REMEMBER - PEST DETECTION IS FOR YOUR PROTECTION

Be alert! Please report promptly any new or unusual forest insect or disease outbreaks to the Forest Service, Forest Insect and Disease Management Staff Unit. Information concerning forest pest problems can most easily be reported on the Detection Report form (R-3 5200-5). A sample of this Detection Report form is shown on page 20. If you need additional information or forms, please write or give us a call at (505) 766-2440.

USDA—Forest Service

DETECTION REPORT

FOREST INSECT AND DISEASE DAMAGE

PEST DETECTION IS FOR YOUR PROTECTION

Be alert. Report promptly any new or unusual forest pest to the Regional Forester (See FSM 5220).

Pest Control Branch USFS

INSTRUCTIONS: After detection of any insect or disease activity, do the following:

(a) Immediately prepare detection report in triplicate.
(b) Send all three copies to the Regional Forester, Forest Service, USDA, 517 Gold Avenue, S.W., Albuquerque, New Mexico 87101.
(c) Pest Control will acknowledge, answer, and return your file copies.

Administrative Unit _____ (Forest, National Park, etc.)

Sub-Unit _____ (Ranger District, etc.)

Date of Observation _____

Observed by _____

Location of Damage (Attach ¼" scale map)

_____

_____

GENERAL INFORMATION

Host _____ Avg. d.b.h. _____

Size class affected:

- ☐ Seedlings
- ☐ Saplings
- ☐ Poles
- ☐ Sawtimber
- ☐ Overmature timber

Damaged standing stems/acre _____

Down stems/acre _____ (Blowdown, slash, cull, etc.)

Number of acres infested _____

Damage to:

- ☐ Single Trees
- ☐ Groups _____ (No. of) _____ (No. per)

TREE DAMAGE SYMPTOMS—(Check term(s) applicable)

Crown:
- ☐ Top
- ☐ Middle
- ☐ Lower
- ☐ Entire

Needles or leaves:
- ☐ Chewed
- ☐ Mined
- ☐ Webbed
- ☐ Spotted
- ☐ Discolored
- ☐ Missing

Tree foliage:
- ☐ Green
- ☐ Fading
- ☐ Sorrel
- ☐ Red
- ☐ Brown
- ☐ Black

Enclosures:
- ▱ Appropriate Maps
- ▱ Damage Samples
- ▱ Insect Specimens

Damage to:
- ☐ New Foliage
- ☐ Old Foliage
- ☐ Both

Tree bole:
- ☐ Cracked
- ☐ Sluffed bark
- ☐ Boring dust
- ☐ Pitch tubes
- ☐ Woodpecker feeding
- ☐ Canker
- ☐ Conks

Branches:
- ☐ Broken
- ☐ Swollen
- ☐ Discolored
- ☐ Cankers
- ☐ Mistletoe
- ☐ Girdled

Associated disturbance:
- ☐ Fire
- ☐ Logging
- ☐ Thinning
- ☐ Blowdown
- ☐ Insects
- ☐ Disease

Unusual weather conditions:
- ☐ Wind
- ☐ Rain
- ☐ Hail
- ☐ Sleet
- ☐ Snow
- ☐ Flood
- ☐ Drought

INFESTATION OR INFECTION CHARACTERISTICS

Insect(s) or Disease(s) if known _____ How long active _____

Status: Static _____ Decreasing _____ Increasing _____ Unknown _____

Remarks: _____

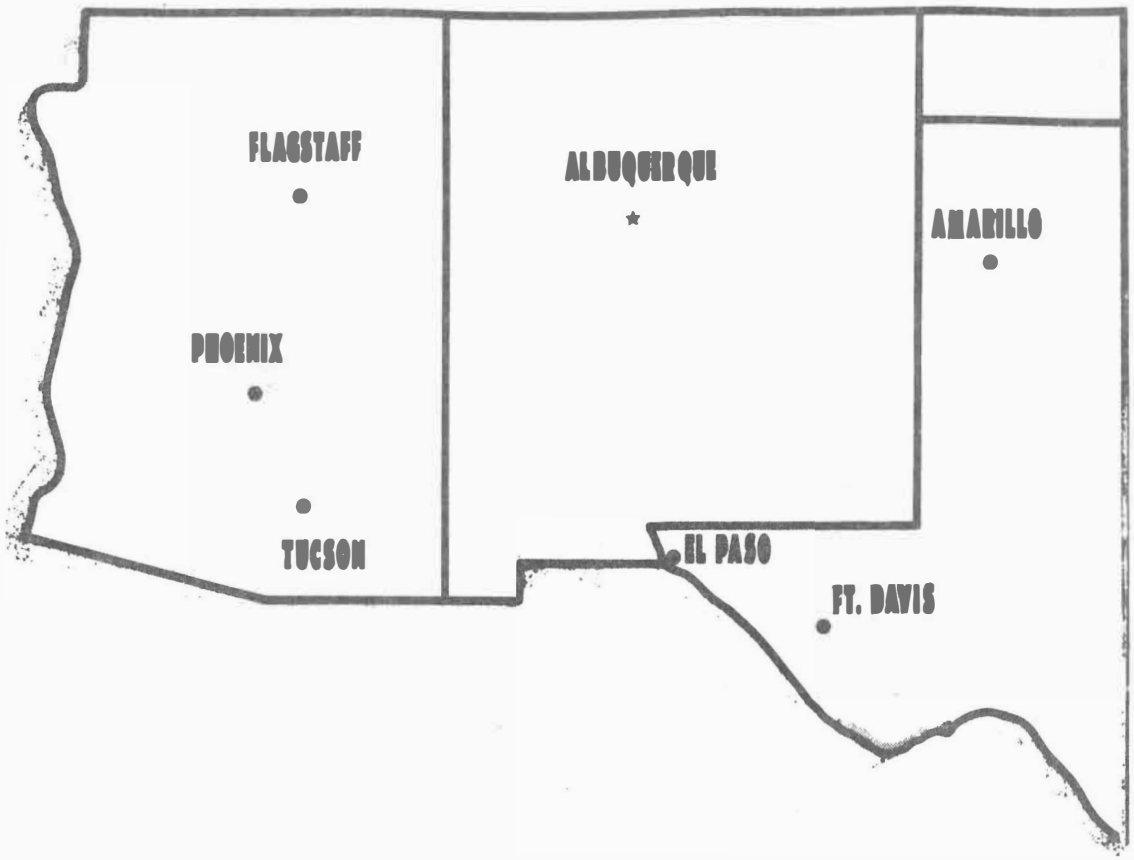
(FOR PEST CONTROL BRANCH USE ONLY)

Remarks:

Unisort Cards By _____ Date _____ Acknowledged By _____

FOREST INSECT AND DISEASE MANAGEMENT

[illegible], NEW MEXICO, W. OKLAHOMA AND W. TEXAS



U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, SOUTHWESTERN REGION

Additional information concerning this report or other forest insect and disease problems can be obtained by contacting the Forest Insect and Disease Management Staff Unit listed below.

USDA, Forest Service
State and Private Forestry
Forest Insect and Disease Management
517 Gold Avenue, SW
Albuquerque, New Mexico 87102

Telephone: (505) 766-2440